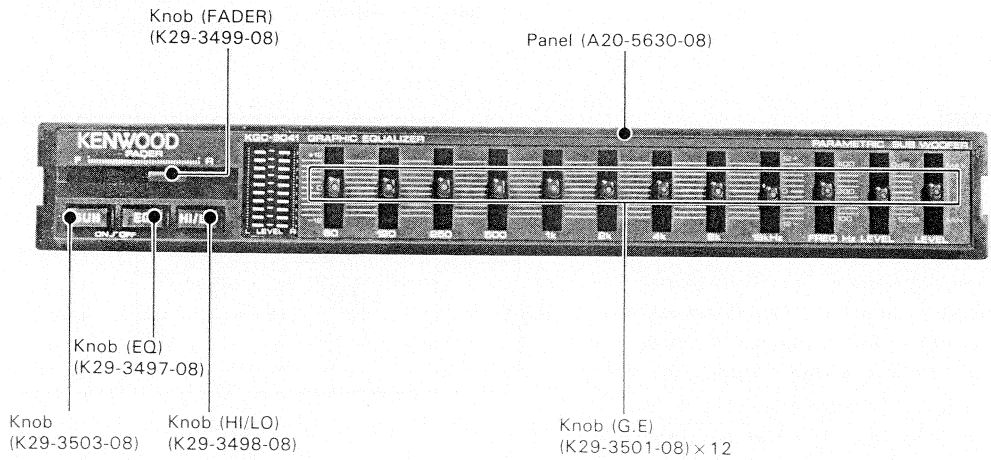
GRAPHIC EQUALIZER

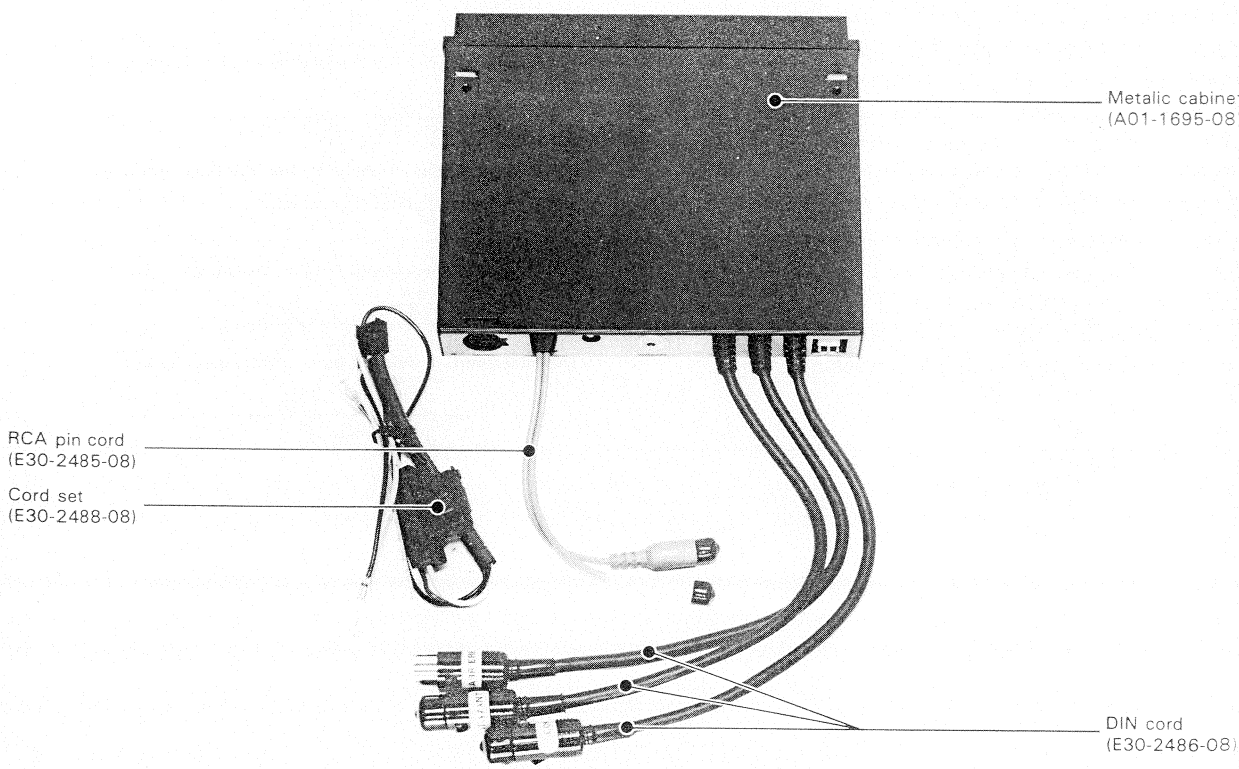
KGC-6041

SERVICE MANUAL

KENWOOD

B51-3645-00(T)2531



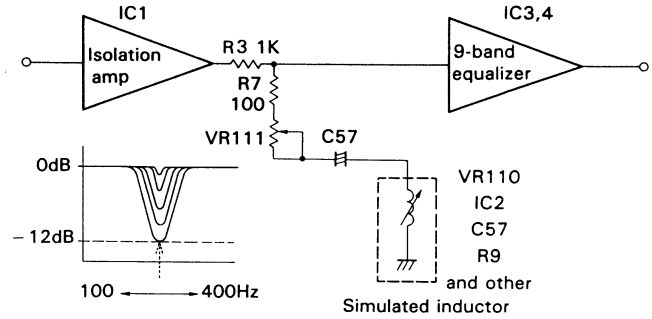


CIRCUIT DESCRIPTION

Parametric equalizer

The frequency response in car compartment tends to be abnormal, with low frequencies enhanced too much. The parametric equalizer is used to compensate for this.

Its operation is provided by the simulated inductor formed by VR110 and IC2, and by the equalizer with variable level (attenuation only) using VR111.



Simulated inductor circuit

The diagram below shows a schema of the simulated inductor circuit.

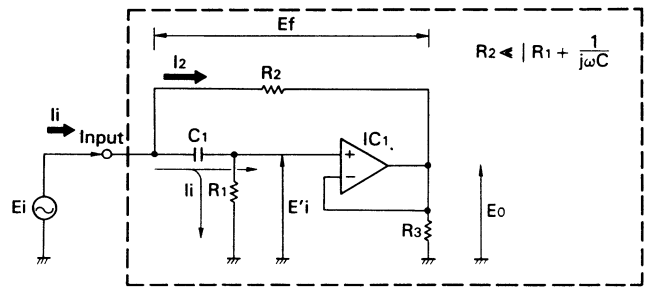
Let us first examine the voltages at different sections. When input voltage Ei is applied to the input terminal, voltage E'i is applied to the non-inverted input terminal of IC_1. As E'i is obtained by differentiating Ei using C_1 and R_1, its phase is advanced by ϕ with respect to Ei. IC_1 is a voltage follower (which operates similarly to an emitter follower), and its output E_o has an equal voltage to E'i and phase advanced by ϕ compared to Ei. Voltage Ef, which is applied to the two ends of R_2, is obtained by subtracting output voltage E_o from Ei. Since the phase of E_o is advanced than that of Ei, the phase of Ef, which is the difference between Ei and E_o, is delayed by ϕ compared to Ei.

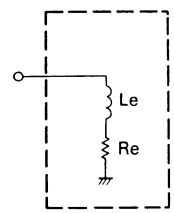
Next let us see the current values. Input current Ii is the sum of current I_1, which flows through C_1 and R_1, and current I_2, which flows through R_2. On the other hand, because the impedance of C_1 and R_1 is sufficiently higher than that of R_2 and that IC_1 has a high input impedance, I_1 becomes very small, so Ii is almost equal to I_2. Therefore, it can be considered that almost the whole of input current Ii flows through R_2.

The value of current I_2 which flows through R_2 is obtained by dividing Ef ($=E_1-E_o$) by R_2. Since the phase of Ef is delayed by ϕ compared to Ei, the phase of I_2 ($=Ef/R_2$) is also delayed by ϕ compared to Ei. This characteristic is just the same as the voltage and current characteristic of an inductor, and this fact means that this circuit is operating as an inductor.

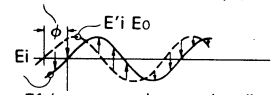
The equivalent inductance and equivalent series resistance are as follows.

$Le = C_1R_1R_2(H)$ $\quad Re = R_2(ohms)$

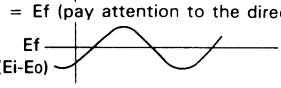




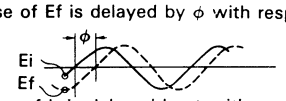
The phase of E'i, Eo is advanced by ϕ with respect to Ei.



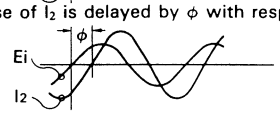
is Ei − Eo = Ef (pay attention to the direction of arrow).



The phase of Ef is delayed by ϕ with respect to Ei.

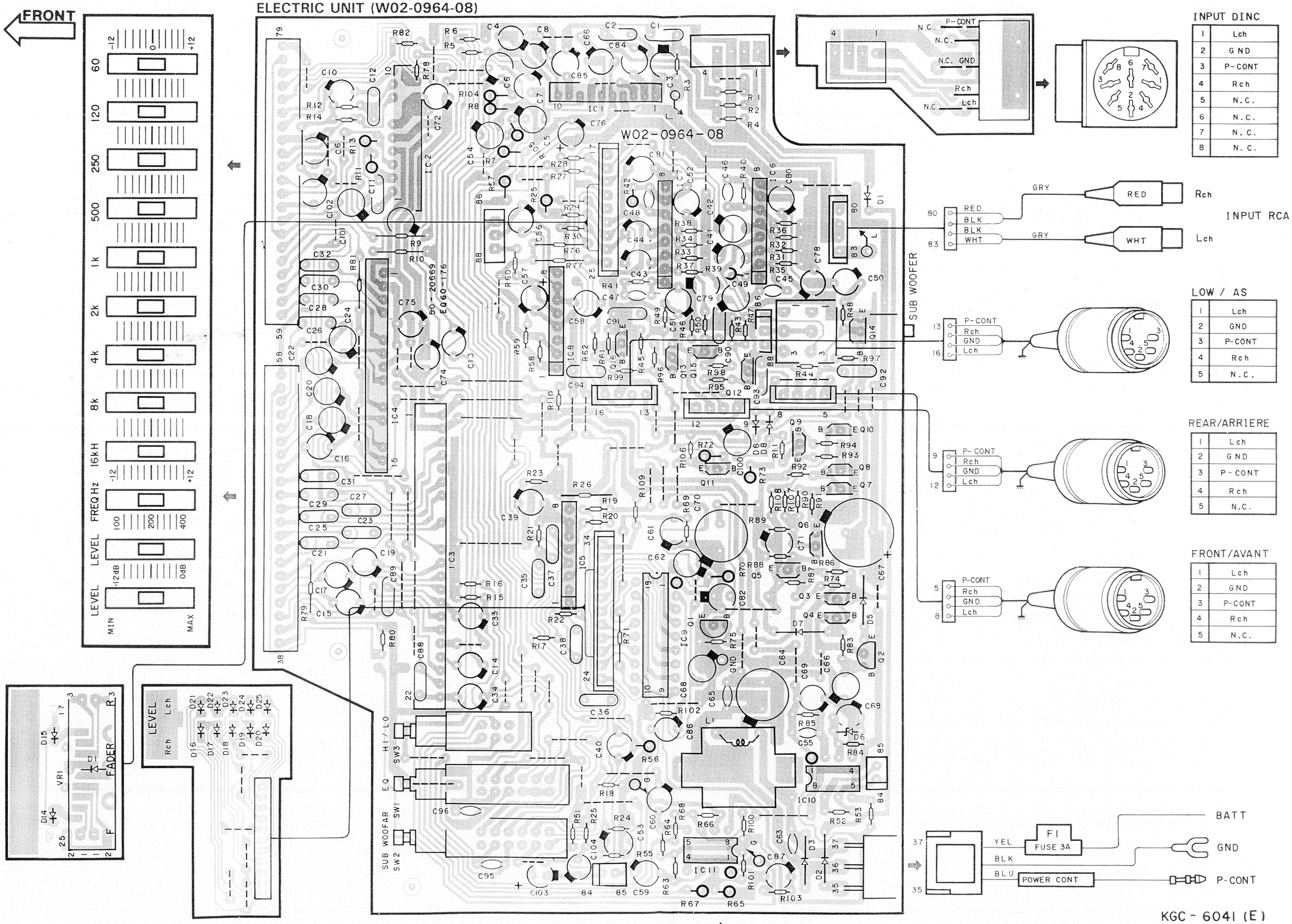


The phase of I_2 is delayed by ϕ with respect to Ei.



PC BOARD (Foil side view)

ELECTRIC UNIT (W02-0964-08)



INPUT DINC	
1	Lch
2	GND
3	P-CONT
4	Rch
5	N.C.
6	N.C.
7	N.C.
8	N.C.

INPUT RCA

Rch

Lch

LOW / AS	
1	Lch
2	GND
3	P-CONT
4	Rch
5	N.C.

REAR/ARRIERE	
1	Lch
2	GND
3	P-CONT
4	Rch
5	N.C.

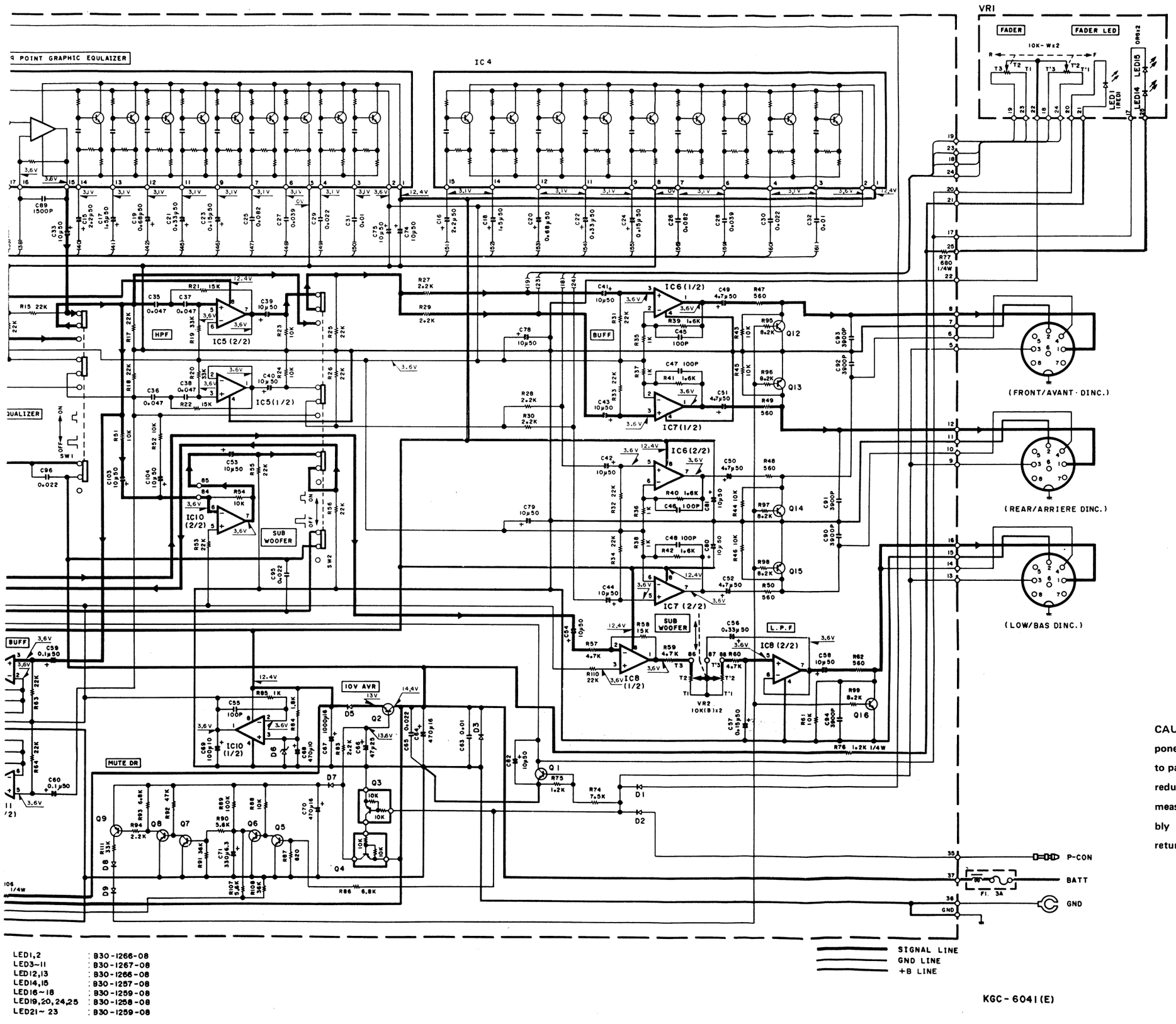
FRONT/AVANT	
1	Lch
2	GND
3	P-CONT
4	Rch
5	N.C.

KGC-6041(E)

Refer to the schematic diagram for the values of resistors and capacitors.

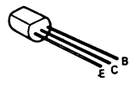
Q1	: 2SC1741A	D1~3,5	: MPG06B	IC1	: NH-0280	LED1,2	: B30-1266-08
Q2	: 2SC2060	D6	: MTZJ3.6B	IC2	: NH-303	LED3~11	: B30-1267-08
Q3	: DTC114ES	D7~9	: 1SS131	IC3	: NH-301	LED12,13	: B30-1266-08
Q4	: DTA114ES			IC4	: NH-302	LED14,15	: B30-1257-08
Q5 ~ 8,10	: 2SC1740S			IC5~8	: M5218L	LED16~18	: B30-1259-08
Q9,11	: 2SA933S			IC9	: AN6888	LED19,20,24,25	: B30-1258-08
Q12~16	: 2SC2878B			IC10,11	: M5218P	LED21~23	: B30-1259-08

F G H I J K L M N

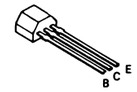


LED1,2	: B30-1266-08
LED3~11	: B30-1267-08
LED12,13	: B30-1266-08
LED14,15	: B30-1257-08
LED16~18	: B30-1259-08
LED19,20,24,25	: B30-1258-08
LED21~23	: B30-1259-08

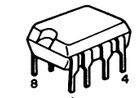
2SC1741A
2SC2060
2SC2878B



DTA114ES
DTC114ES
2SA933S
2SC1740S

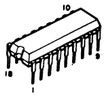


M5218P



M5218L

AN6888



NH-0280

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

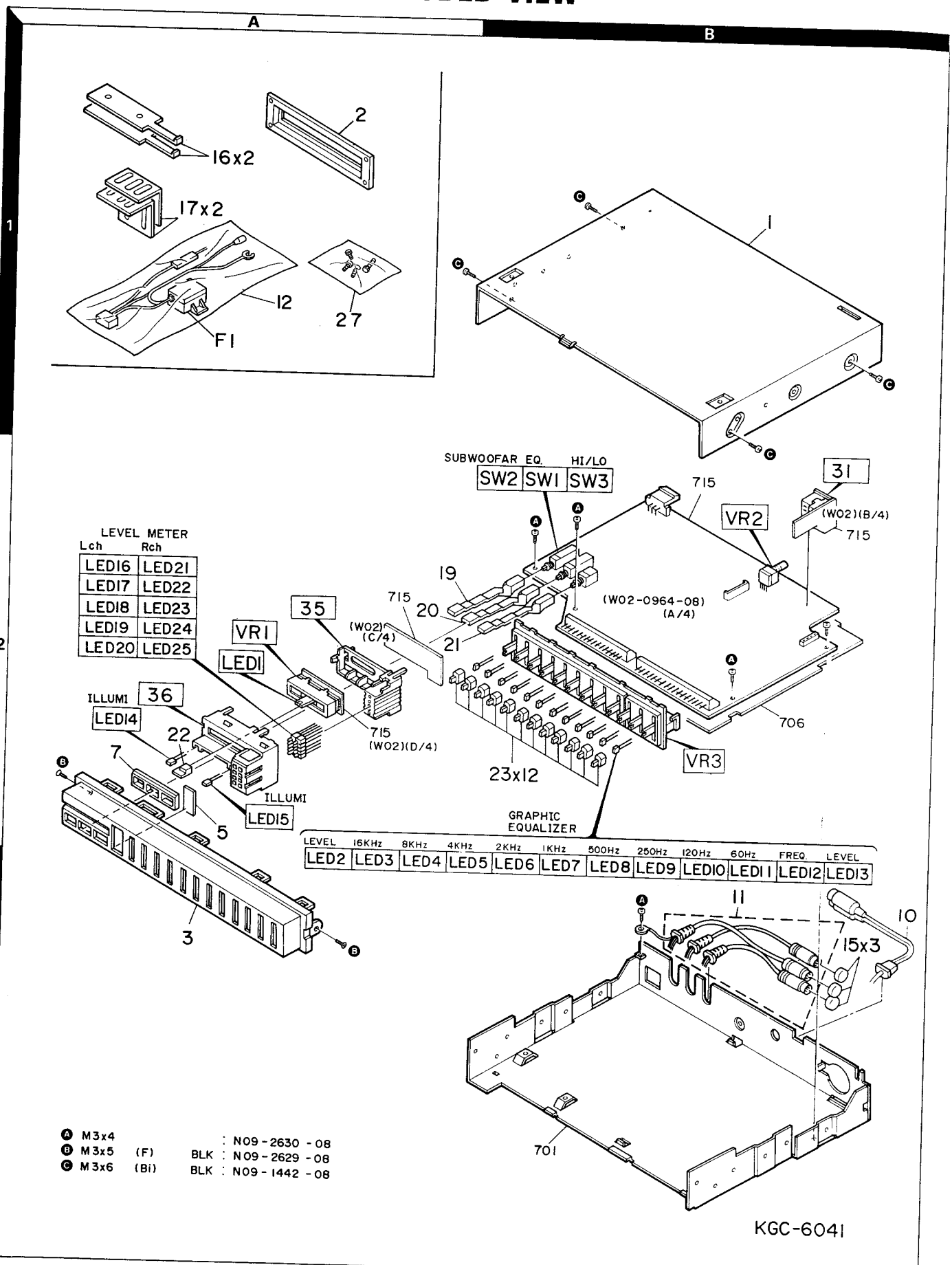
KGC-6041(E)

Y09-2962-71

KGC-6041

KENWOOD

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
KGC-6041						
1	1B	*	A01-1695-08	METALLIC CABINET		
2	1A	*	A21-1740-03	DRESSING PANEL		
3	3A	*	A20-5630-08	PANEL		
5	2A	*	B11-0203-08	FILTER		
7	2A	*	B19-0581-08	LIGHTING BOARD		
-			B46-0100-10	WARRANTY CARD		
-		*	B50-9125-00	INSTRUCTION MANUAL		
-			B58-0803-13	CAUTION CARD		
10	3B	*	E30-2485-08	R.C.A. PIN CORD		
11	3B	*	E30-2486-08	DIN CORD		
12	1A	*	E30-2488-08	CORD SET		
15	3B		F29-0046-15	INSULATOR		
F1	1A		F06-3026-05	FUSE (5A)		
-		*	H01-7976-08	ITEM CARTON BOX		
-		*	H03-1424-08	OUTER PACKING CASE		
-		*	H10-3692-08	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-3693-08	POLYSTYRENE FOAMED FIXTURE		
-			H25-0117-04	PROTECTION BAG (180 X 270)		
-		*	H25-0329-04	PROTECTION BAG (280 X 500)		
16	1A		J21-3575-04	MOUNTING HARDWARE		
17	1A		J21-3801-04	MOUNTING HARDWARE		
19	2B	*	K29-3503-08	KNOB		
20	2A	*	K29-3497-08	KNOB (EQ)		
21	2A	*	K29-3498-08	KNOB (HI/LO)		
22	2A	*	K29-3499-08	KNOB (FADER)		
23	2B	*	K29-3501-08	KNOB (G.E)		
27	1A	*	N99-0279-08	SCREW SET		
A	3B	*	N09-2630-08	SCREW (3X4 BIND S-TITE)		
B	2A,3A		N09-2629-08	SCREW (3X6 FLAT S-TITE)		
C	1A	*	N09-1442-08	SCREW (3X6 BIND S-TITE)		
ELECTRIC UNIT (W02-0964-08)						
LED1 ,2		*	B30-1266-08	LED (POWER FADER , EQ LEVEL)		
LED3 -11		*	B30-1267-08	LED (BAND LEVEL)		
LED12,13		*	B30-1266-08	LED (FREQ , EQ LEVEL)		
LED14,15		*	B30-1257-08	LED (ILLUMINATION)		
LED16-18		*	B30-1259-08	LED (LEVEL METER -L)		
LED19,20		*	B30-1258-08	LED (LEVEL METER -L)		
LED21-23		*	B30-1259-08	LED (LEVEL METER -R)		
LED24,25		*	B30-1258-08	LED (LEVEL METER -R)		
C1 ,2			CQ92M1H471K	MYLAR 470PF K		
C3 -8			CE04DW1H100M	ELECTRO 10UF 50WV		
C9 ,10			CE04DW1HR47M	ELECTRO 0.47UF 50WV		
C11 ,12			CF92V1H473J	MF 0.047UF J		
C13 ,14			CE04DW1H100M	ELECTRO 10UF 50WV		
C15 ,16			CE04DW1H2R2M	ELECTRO 2.2UF 50WV		
C17 ,18		*	C90-1738-08	ELECTRO 1.5UF 50WV		
C19 ,20			C90-1245-05	ELECTRO 0.68UF 50WV		
C21 ,22			CE04DW1HR33M	ELECTRO 0.33UF 50WV		
C23 ,24		*	C90-1739-08	ELECTRO 0.15UF 50WV		
C25 ,26			CF92V1H823J	MF 0.082UF J		

E: Scandinavia & Europe K: USA P: Canada
U: PX(Far East, Hawaii) T: England M: Other Areas
UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C27 ,28			CQ92M1H393K	MYLAR 0.039UF K		
C29 ,30			CQ92M1H223K	MYLAR 0.022UF K		
C31 ,32			CQ92M1H103K	MYLAR 0.010UF K		
C33 ,34			CE04DW1H100M	ELECTRO 10UF 50WV		
C35 -38			CF92V1H473J	MF 0.047UF J		
C39 -44			CE04DW1H100M	ELECTRO 10UF 50WV		
C45 -48			CK45B1H101K	CERAMIC 100PF K		
C49 -52			CE04DW1H4R7M	ELECTRO 4.7UF 50WV		
C53 ,54			CE04DW1H100M	ELECTRO 10UF 50WV		
C55			CK45B1H101K	CERAMIC 100PF K		
C56			CE04DW1HR33M	ELECTRO 0.33UF 50WV		
C57		*	C90-1739-08	ELECTRO 0.15UF 50WV		
C58			CE04DW1H100M	ELECTRO 10UF 50WV		
C59 ,60			CE04DW1H0R1M	ELECTRO 0.1UF 50WV		
C61 ,62			CE04DW1H4R7M	ELECTRO 4.7UF 50WV		
C63			CK45F1H103Z	CERAMIC 0.010UF Z		
C64			CE04DW1C471M	ELECTRO 470UF 16WV		
C65			CK45F1H223Z	CERAMIC 0.022UF Z		
C66			CE04DW1E470M	ELECTRO 47UF 25WV		
C67			C90-1256-05	ELECTRO 1000UF 16WV		
C68			CE04DW1A471M	ELECTRO 470UF 10WV		
C69			CE04DW1A101M	ELECTRO 100UF 10WV		
C70			CE04DW1C471M	ELECTRO 470UF 16WV		
C71			CE04DW0J331M	ELECTRO 330UF 6.3WV		
C72			CE04DW1C471M	ELECTRO 470UF 16WV		
C73 -76			CE04DW1H100M	ELECTRO 10UF 50WV		
C78 -82			CE04DW1H100M	ELECTRO 10UF 50WV		
C84 ,85			CE04DW1E470M	ELECTRO 47UF 25WV		
C86 ,87			CE04DW1H0R1M	ELECTRO 0.1UF 50WV		
C88 ,89			CQ92M1H152K	MYLAR 1500PF K		
C90 -94			CQ92M1H392K	MYLAR 3900PF K		
C95 ,96			CK45F1H223Z	CERAMIC 0.022UF Z		
C98			CE04DW1H100M	ELECTRO 10UF 50WV		
C99			CE04DW1A221M	ELECTRO 220UF 10WV		
C101,102			CE04DW1HR22M	ELECTRO 0.22UF 50WV		
C103,104			C90-0478-05	ELECTRO 10UF 16WV		
31	2B	*	E06-1001-05	CYLINDRICAL RECEPTACLE		
35	2A	*	J19-3095-08	HOLDER		
36	2A	*	J19-3096-08	HOLDER		
VR1		*	R13-3049-08	SLIDE VR ASSY		
VR2			R10-3036-08	POTENTIOMETER(10KB X 2)		
VR3		*	R90-0822-08	12POINT VR ASSY		
SW1 ,2			S40-4065-08	PUSH SWITCH (EQ , SUB WOOFER)		
SW3			S40-2340-08	PUSH SWITCH (METER SENSOR)		
D1 -3			MPG06B	DIODE		
D5			MPG06B	DIODE		
D6		*	MTZJ3.6B	DIODE		
D7 -9			1SS131	DIODE		
IC1			NH-0280	IC(ISOLATION AMP)		
IC2		*	NH-303	IC(PARA EQ)		
IC3		*	NH-301	IC(9POINT GRAPHIC EQ)		
IC4		*	NH-302	IC(9POINT GRAPHIC EQ)		

E: Scandinavia & Europe K: USA P: Canada
U: PX(Far East, Hawaii) T: England M: Other Areas
UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

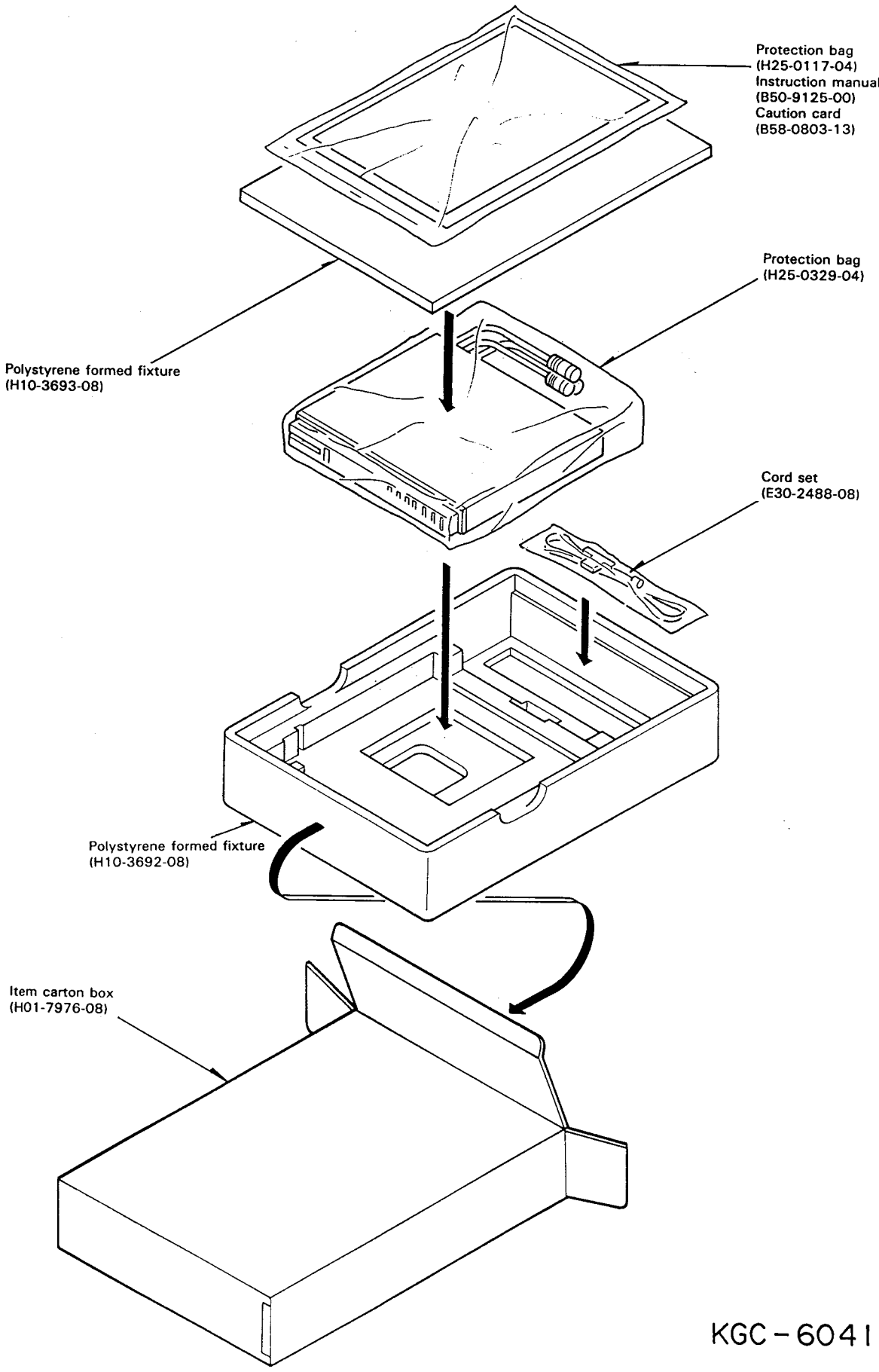
* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Telle ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
IC5 -8			M5218L	IC(OP AMP X2)		
IC9			AN6888	IC(5PT LED LEVEL METER DR X2)		
IC10,11			M5218P	IC(OP AMP X2)		
Q1		*	2SC1741A	TRANSISTOR		
Q2			2SC2060	TRANSISTOR		
Q3			DTC114ES	TRANSISTOR		
Q4			DTA114ES	TRANSISTOR		
Q5 -8			2SC1740S	TRANSISTOR		
Q9			2SA933S	TRANSISTOR		
Q10			2SC1740S	TRANSISTOR		
Q11			2SA933S	TRANSISTOR		
Q12 -16			2SC2878B	TRANSISTOR		
SCREW SET (N99-0279-08)						
"			N09-0335-05	SCREW		
"			N09-1417-05	SCREW		

E: Scandinavia & Europe K: USA P: Canada
U: PX(Far East, Hawaii) T: England M: Other Areas
UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PACKING



KGC-6041

SPECIFICATIONS

Equalizer Section

Equalizer Center Frequency	60 Hz, 120 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, 16 kHz
Equalization Range	−12 ~ +12 dB
Sub-woofer Cut-off Frequency	50 ~ 150 Hz (Variable)
Sub-woofer Output Gain	−∞ ~ +10 dB
Sub-woofer Cut-off Slope	12 dB/oct
Parametric Equalizer Frequency	100 ~ 400 Hz
Equalization Range	−12 ~ 0 dB

Audio Section

Input Impedance	10 kΩ
Output Impedance	600 Ω
Signal to Noise Ratio	100 dB
T.H.D.	0.01 %
Frequency Response (−3 dB)	20 Hz ~ 60 kHz
Gain	0 dB

General

Operating Voltage	14.4 V (11 ~ 16 V)
Current Consumption (MAX)	300 mA
Dimensions (W × H × D)	180 × 25 × 150 mm 7-1/16 × 1 × 5-7/8 inch
Weight	0.8 kg 1.8 lb

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Kenwood poursuit une politique de progrès constants en ce qui doncerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the Europe (E) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

KENWOOD CORPORATION
Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD U.S.A. CORPORATION
2201 East Dominguez Street, Long Beach, CA 90810;
550 Clark Drive, Mount Olive, NJ 07828, U.S.A.

KENWOOD ELECTRONICS CANADA INC.
P.O. Box 1075 959 Gana Court, Mississauga, Ontario, Canada L4T 4C2

KENWOOD ELECTRONICS BENELUX N.V.
Mechelsesteenweg 418 B-1930 Zaventem, Belgium

KENWOOD ELECTRONICS DEUTSCHLAND GMBH
Rembrucker-Str. 15, 6056 Heusenstamm, West Germany

TRIO-KENWOOD FRANCE S.A.
Hi-Fi·VIDEO·CAR Hi-Fi
13, Boulevard Ney, 75018 Paris, France

TRIO-KENWOOD U.K. LTD.
17 Bristol Road, The Metropolitan Centre, Greenford, Middx. UB6 8UP England

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia

KENWOOD & LEE ELECTRONICS, LTD.
Wang Kee Building, 4th Floor, 34-37, Connaught Road, Central, Hong Kong